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Published:

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

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(54) Title: UNUSUALLY NARROW PARTICLE SIZE DISTRIBUTION CALCINED KAOLINS

$$\frac{(\text{particle size at a cumulative mass of } < 80\%)}{(\text{particle size at a cumulative mass of } < 20\%)} \leq 3.$$

$$\frac{(\text{particle size at a cumulative mass of } < 80\%)}{(\text{particle size at a cumulative mass of } < 40\%)} \leq 3.5.$$

(57) Abstract: The present invention relates to calcined kaolin having an unusually narrow particle size distribution. The calcined kaolin can have a particle size distribution wherein: (I). The calcined kaolin may be prepared from a hydrous kaolin having a particle size distribution, wherein: (II). The calcined kaolin can be used in many applications, such as paint and coating compositions for paper or paper board, and more generally, the inventive products may be used wherever calcined kaolins are used.

INTERNATIONAL SEARCH REPORT

Int'l Application No
PCT/US2004/007821

| A. CLASSIFICATION OF SUBJECT MATTER | | | | |
|-------------------------------------|-----------|-----------|-----------|-----------|
| IPC 7 | C04B33/04 | B01J21/16 | D21H17/68 | D21H19/40 |
| | C09C1/42 | C01B33/40 | | C08K3/34 |

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 C04B B01J D21H C08K C09C C01B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, CHEM ABS Data, INSPEC, COMPENDEX

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|----------|---|-----------------------|
| X | US 5 393 340 A (SLEPETYS RICHARD A ET AL) 28 February 1995 (1995-02-28) tables I,VI | 1-22 |
| X | ----- US 6 136 086 A (MATHUR SHARAD ET AL) 24 October 2000 (2000-10-24) cited in the application tables 5,6 | 1-22 |
| X | ----- EP 1 199 338 A (IMERYS KAOLIN INC) 24 April 2002 (2002-04-24) figures 13,15,21,23; examples 1,6A,7A | 1-22 |
| A | ----- US 6 150 289 A (CHEN CHING-YIH ET AL) 21 November 2000 (2000-11-21) table v | 1-22 |

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
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- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search

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22.10.04

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INTERNATIONAL SEARCH REPORT

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Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.: because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1 - 22

Remark on Protest

The additional search fees were accompanied by the applicant's protest.
 No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-22

Claims 1-22 concern compositions comprising calcined kaolin having a certain particle size distribution, a particular range of median particle size and a low amount of alkali and alkaline earth metals, and further products and a process which use such compositions.

2. claims: claims 23-36

Concerns methods for preparing calcined kaolin whereby the calcined kaolin and the hydrous kaolin have particular psd's, with calcining at 500-1200°C.

3. claims: 37-40

Claims 37-40 concern a composition (same particle size distribution as in claim 1) and a process (hydrous kaolin has the same psd. as in cl. 23), whereby hydrous kaolin from the Rio Capim area of Brazil is used to obtain the calcined kaolin product.

4. claims: 41-43

Claims 41-43 concern a composition (same psd as in cl. 1) and a process (hydrous kaolin has the same psd. as in cl. 23) characterized by refining in the absence of a defining step.

5. claims: 44, 45

Independent claim 44 defines a calcined kaolin composition with the same particle size distribution as claim 1, but with a median particle size greater than 1 micron and a certain value of oil absorption.

INTERNATIONAL SEARCH REPORT

Information on patent family members

Int'l Application No
PCT/US2004/007821

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